This Time Really is Different:
The Effect of COVID-19 on Independent K-12 School Enrollments

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Abstract

The COVID-19 pandemic caused a severe economic recession in 2020. Historically, during economic recessions, there are large declines in independent (private) school enrollments in the United States. Thus, it would be expected that American independent schools would have experienced enrollment declines between fall 2019 and fall 2020. But this time was different. In our sample, 70 percent of independent schools experienced increases in enrollment or level enrollments during the pandemic recession. In our multiple regression analyses, the main driver of this beneficial change in enrollments for independent schools was whether the public school districts that served their home county were open for only virtual instruction to start the 2020-21 academic year. We find suggestive evidence that a higher prevalence of county-level COVID-19, measured as deaths per capita, was associated with higher independent school enrollments as well. Economic conditions do not appear to have played a major role in changes in independent school enrollments.

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Introduction

The onset of COVID-19 in early 2020 triggered a tragic health crisis in most of the world, including the United States. The health crisis led to an economic crisis as well. From February to April 2020, total non-farm payroll employment fell by 14.7 percent in the U.S. While employment experienced some recovery during subsequent months, they remained 7.5 percent below pre-recession levels in August 2020.[1] The unemployment rate surged from 3.5 percent pre-recession to 14.4 percent in April 2020 and had only improved to 8.4 percent by August 2020.[2]

By way of comparison, payroll employment fell by "only" 6.3 percent over a 26-month period during the "great recession" of 2008-09.[3] Thus, the negative employment shock during the pandemic recession came much faster and was much deeper relative to the negative employment shock during the great recession—where the latter had been the worst shock to American employment since the Great Depression.

Historically, when economic recessions hit the United States, enrollments in independent (private) K-12 schools have declined (McCluskey, 2020). For example, during the great recession total independent school enrollments declined from 5.91 million in 2007 to 5.27 million in 2011—a decline of almost 11 percent (National Center for Education Statistics, 2019a).

These declines in enrollment during economic downturns do not appear to be temporary—by 2017, total independent school enrollments were still about 190,000 students below their 2007 level.[4] In addition, public school enrollments increased by more than 1.4 million students between 2007 and 2017, so a decline in the school-aged population does not explain the decline in independent school enrollments during this time period (National Center for Education Statistics, 2019b).

Lower independent school enrollments due to economic recessions are of policy interest for two reasons. First, families are less likely to get their preferred array of educational and social aspects of schooling for their children if they prefer a given independent school to their public school alternative—but can no longer afford it. Second, student migration from the independent school sector to the public school sector increases costs to taxpayers, as state funding formulas tend to depend on student enrollment or attendance counts (Verstagen, 2018). Therefore, as more students migrate to public schools, state taxpayer costs will increase in order to fund larger state payments to public school districts.

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[1] These employment figures were tabulated from the Bureau of Labor Statistics Quarterly Census of Employment and Wages, which is housed in the U.S. Department of Labor (Bureau of Labor Statistics, 2021).

[2] Ibid.

[3] Ibid.

[4] As another example, independent school enrollments also declined significantly between 2001 and 2003, while public school enrollments increased. While not the focus of this paper, some independent school families may switch to homeschooling during economic downturns as well.

A decline in independent school enrollments is to be expected during recessions, as households are more likely to experience unemployment and incomes decline during these economic downturns. For the large majority of independent school students in the United States, their families must pay their cost of attendance, while public schools are universally available at a zero price, as their costs of capital and operation are paid by taxpayers.[5] While some families may prefer the educational and/or social offerings at independent schools for their children—and choose to pay for independent school attendance costs themselves—when parents and caregivers lose their jobs or experience significant declines in income, sending children to independent schools becomes less feasible financially. Based on experience from history, in April 2020, McCluskey (2020) warned that the K-12 independent school sector faced an "existential threat" in terms of the pandemic recession leading to severe enrollment declines.

Using data on 158 independent schools from fifteen states and the District of Columbia, in this paper we analyze the change in independent school enrollments between fall 2019 and fall 2020. Our main findings are that:

- 70 percent of independent schools experienced increases in enrollment or level enrollments during the pandemic recession. This is surprising given the severity of the pandemic recession.

- In our multiple regression analysis, the main driver of this beneficial change in enrollments for independent schools was whether the public school districts that served their home county were open for only virtual instruction to start the 2020-21 academic year.
    - In our sample, the learning modalities to start the 2020-21 academic year in the independent and public school sectors were mirror images of each other: while 75.5 percent of independent schools were open for full-time, face-to-face instruction, only 24.5 percent of public schools began the academic year with this learning modality.

- We find suggestive evidence that a higher prevalence of county-level COVID-19—measured as deaths per capita—was associated with higher independent school enrollments as well.

- Economic conditions do not appear to have played a major role in changes in independent school enrollments.

The rest of this paper is organized as follows. We describe our data and empirical approach to analyzing changes in independent school enrollments between fall 2019 and fall 2020. Then,

[5] There is a significant and growing proportion of independent school students who have at least some of their cost of attendance paid by taxpayers through school choice programs. According to EdChoice, as of 2020, there were 1.28 million students who received an average of $2,805 in taxpayer support to defray the cost of their independent school education—which translates to 11.6 percent of independent school students and 1 percent of all school-aged children (EdChoice, 2020).

we report our findings and conclusions. To our knowledge, we are the first paper to analyze the anomalous enrollment patterns in K-12 independent schools in the United States during the recent and sharp economic recession. Given that independent school enrollments tended to remain the same or increase in the wake of the particularly acute pandemic recession, it appears that this time really was different, as compared to the effects of prior economic recessions on K-12 independent schools. The response of the public education sector to the health crisis appears to be a significant reason why independent school enrollments did well during the COVID-19 pandemic and recession—relative to previous economic recessions.

Data

To analyze the change in enrollments in independent schools between fall 2019 and fall 2020, the authors of this paper administered a very brief survey to independent school business officers to ask them questions about their enrollments in fall 2020 as compared to fall 2019; and to what extent their mode of school was fully in-person, a hybrid of in-person and virtual schooling, or fully virtual. These business officers were also asked to share their school's tuition.

The survey was administered in November 2020 to business officers whose independent schools are a member of MISBO. MISBO is a non-profit association serving the business and operational needs of independent schools primarily located in the southeastern U.S. 158 school business officers from fifteen states and the District of Columbia responded to the survey out of 290 MISBO member schools invited to participate for a 54.5 percent response rate. There was no incentive for these business officers to complete the survey—the president of MISBO merely emailed MISBO members and asked them to complete the short survey. The exact survey questions and the states represented in our sample are listed in appendix 1. To maximize our survey response rate, we asked very few questions and did not ask questions that required much effort from respondents.

Since we observed the counties in which each of the independent schools in our sample are located, we merged county-level data on COVID-19 and economic conditions into our survey data in order to analyze changes in independent school enrollments between fall 2019 and fall 2020.

We also merged in data as to whether the public school districts that served each county were fully in-person, a hybrid of in-person and virtual schooling, or fully virtual at the start of fall 2020. These data on public school district learning modalities were compiled by *Education Week* (2020). *Education Week* compiled information on learning modalities for 907 public school districts, including the 100 largest districts in the United States. For each county that houses the independent schools in our sample, the *Education Week* database contained

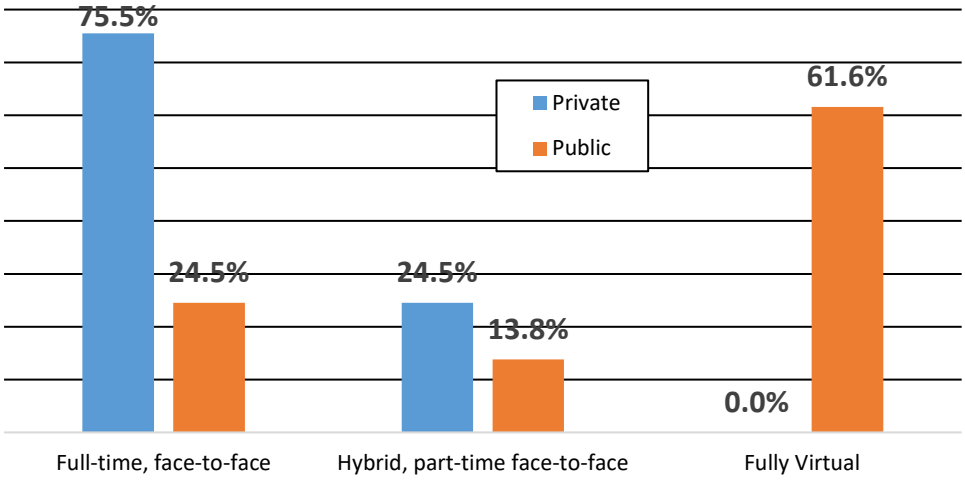
information for the learning modalities for the public school districts that served those counties.[6]

There was a stark difference in learning modalities between independent schools and the public school districts in their counties at the start of the fall 2020 semester. As shown in figure 1 below, 75.5 percent of independent schools in our sample were open "full-time, face-to-face" to start the 2020-21 academic year. Of the public school districts that served their counties, only 24.5 percent were open for full-time, face-to-face learning to start the 2020-21 academic year.

The remaining 24.5 percent of independent schools were open for "hybrid, part time face-to-face" learning. Among the public school districts in their counties, 13.8 percent were open in a hybrid modality, while the remaining 61.6 percent were open in a fully virtual format, with children learning exclusively from home. No independent schools in our sample began the 2020-21 academic year in a fully virtual learning modality.

Figure 1: Educational Modality

Source: Fall 2020 Survey of MISBO Members administered by the paper authors (n=158) and matching public school districts from *Education Week* (2020)



As a comparison, in the overall *Education Week* sample of 907 public school districts, 24 percent were fully open for face-to-face instruction and in our sample 24.5 percent of public school districts were fully face-to-face in fall 2020—almost identical. However, the public school districts for the counties in our analysis were more likely to be open with virtual instruction only: 27 percent of the *Education Week* sample was open in a hybrid format, while only 13.8 percent of the public school districts in our analysis were open in a hybrid modality.

[6] For almost all of our sample, one public school district served each county. For states that had more than one public school district serving the county, we used the data for the largest public school district in our analysis. Using other reasonable approaches to coding learning modalities for nearby public schools did not change our point estimates or statistical significance of key variables in any important way--that is, effect sizes and significance levels were essentially unchanged.

Correspondingly, 49 percent of the districts in the full *Education Week* sample were in a virtual-only modality, while 61.6 percent of the public school districts that serve the counties in our sample were open only for virtual instruction.

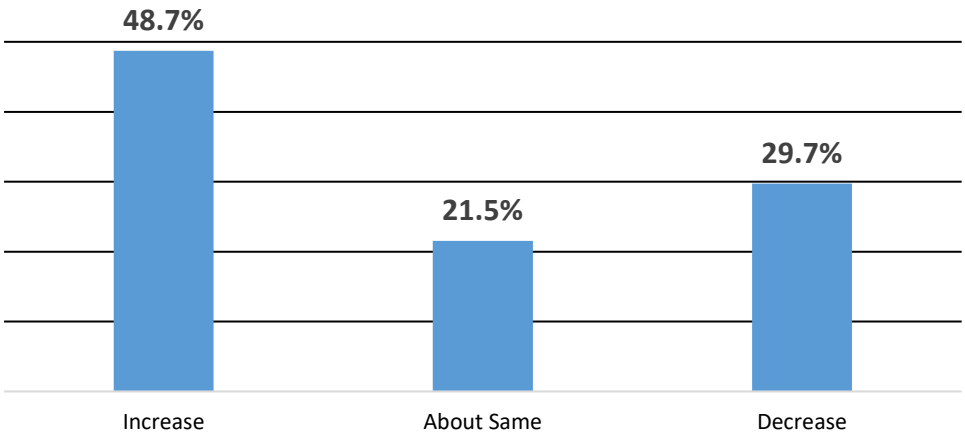
Valant (2020), Hartney and Finger (2020), and DeAngelis and Makridis (2020) find that public school modality opening decisions were generally not related to the incidence of COVID-19 (as measured by cases and deaths per capita at the county level). Each of these three studies also finds that the share of Trump voters in the county was positively associated with public schools opening face-to-face in fall 2020. Further, DeAngelis and Makridis (2020) and Hartney and Finger (2020) detect a positive relationship between teacher union strength and public schools opening in a virtual-only modality.

There also appear to have been two other relevant factors with respect to public school decisions. First, Hartney and Finger also find evidence that a larger presence of an exit option for families (more Catholic schools in the county) made it more likely that public schools returned to in-person learning. Second, DeAngelis and Makridis (2021) build on their earlier work and find that having higher levels of per student funding were associated with districts opening with a virtual-only learning modality.

As shown above, the independent schools in our sample made very different decisions about fall 2020 learning modalities relative to the public school districts in their counties, and Valant (2020), Hartney and Finger (2020), DeAngelis and Makridis (2020), and DeAngelis and Makridis (2021) provide consistent evidence that political and other motivations, rather than health conditions, were a primary driver of public school decisions with respect to their choice of virtual-only, hybrid, or face-to-face instruction in fall 2020.

As shown in figure 2, of the 158 independent schools in our analytic sample, 77 (48.7 percent) experienced an increase in enrollment between fall 2020 and fall 2019. 34 independent schools (21.5 percent) reported that their enrollments were “about the same” in fall 2020 relative to the prior fall. Of these 34 schools, 14 reported that they had excess demand for at least some grade levels—that is, these schools would have experienced an enrollment gain in fall 2020, if they had the capacity. The remaining 47 schools (29.8 percent) experienced an enrollment decline in fall 2020. Thus, just over 70 percent of independent schools in our sample experienced no enrollment decline during the severe COVID-19 economic recession.

Figure 2: Enrollment Trend at Independent Schools
Fall 2019 to Fall 2020
Source: Fall 2020 Survey of MISBO Members administered by the paper authors (n=158)



To explain changes in independent school enrollments between fall 2019 and fall 2020, we included variables in our multiple regression analyses measuring:

- The extent of COVID-19 in each school's county
- Economic conditions at the county level—as indicators of economic factors that impact the demand for independent schooling
- The learning modality of the public school districts (fully open, hybrid, or fully virtual) that serve the counties that house each independent school
- Independent school tuition levels, adjusted for differences in average wage levels across counties.

As shown in table 1 below, we had two measures of the presence of COVID-19 in each county in August 2020—when school learning modality decisions had to be made and when school enrollment decisions had to be made by families: the number of cases per capita (*cases per capita*) and the number of deaths per capita (*deaths_percapita*).[7] The mean number of cases per 100,000 residents was 611 and the mean number of deaths per 100,000 residents was 12.2. However, there was substantial variation across the counties that house the independent schools in our sample—the low in cases per capita was 131.2, while the high was 1,535.7 per 100,000 residents. Two independent schools in our sample were in counties that experienced no COVID-19 deaths in August 2020, while the high was 49.4 deaths per 100,000 residents.

[7] The source of these data on COVID-19 cases and deaths per county for August 2020 were retrieved from USA FACTS (www.usafacts.org). USA FACTS was created by former Microsoft CEO Steve Ballmer to provide more transparency about the American population and governments at the federal, state, and local levels. USA FACTS partners with Penn Wharton Budget Model at the University of Pennsylvania and the Institute for Economic Policy Research at Stanford University to provide the data available on their website.

Table 1: Presence of COVID-19 in Counties						
	Variable Name	Description	Mean	Standard Deviation	Minimum	Maximum
Cases Per Capita	*cases_percapita*	Confirmed cases of COVID divided by population of county	611.0	252.6	131.2	1535.7
Deaths Per Capita	*deaths_percapita*	Death from COVID divided by population of county	12.2	8.5	0.0	49.4

Several variables were considered as controls for economic factors that could affect independent school enrollments. As discussed below, the preferred model included "*pct_change_employment" and "real_tuition".*

Table 2: Economic Variables						
	Variable Name	Description	Mean	Standard Deviation	Minimum	Maximum
Percent Change in Private Employment	*pct_change_ employment*	% Change in private sector employment; 2Q2019 to 2Q2020	-0.090	0.036	-0.21	0.004
Real Tuition	*real_tuition*	Institutional tuition deflated by pre-pandemic and local wages	21.63	11.97	5.23	81.81

The purpose of the economic variable was to control for pandemic-induced deterioration in the economic climate. Since previous recessions had induced a reduction in independent school parent employment, we expected economic factors to be relevant. Further, since the cost of tuition could be a factor considered in the decision between public and independent school, it was included as a control. This tuition variable was deflated by average wages in the market to control for the difference in local "cost of living".

Several other local economic variables were considered including the percent annual change in average wages and in the number of establishments between the second quarter of 2019 and the second quarter of 2020.[8] It should be noted that average wage variables were complicated by the mix of industries that were impacted by the pandemic recession. Specifically, much of the job loss was in sectors with below average wages. As such, the average wage could be inflated by the disproportionate loss of lower paying jobs. Thus, percentage change in average wages may not be the best economic measure to capture decreases in the demand for independent schooling that would result from the pandemic recession. The average number of

[8] Establishments are single physical locations where individuals are employed. Therefore, a given business firm may encompass more than one establishment. For example, if a given grocery store chain has two stores at separate locations within a given county, that would be counted as two establishments. Each of these three economic variables were pulled from: Employment private employers, Private establishments, Average weekly wage private employers, Quarterly Census of Employment and Wages, Bureau of Labor Statistics, U.S. Department of Labor, https://www.bls.gov/cew

establishments increased by 3.9 percent between the second quarter of 2019 to the second quarter of 2020—largely due to gains in the number of establishments in late 2019 and early 2020.

What we use in our preferred model in the next section is the percentage change in employment between the second quarter of 2019 and the second quarter of 2020. On average, county-level employment (the number of jobs) declined by 9 percent over this year in the counties in our sample. We also explored using shorter changes in each of these three economic variables—such as percent changes from the first quarter to the second quarter of 2020. As discussed in the next section, we explored myriad ways to measure these three economic variables and could not detect a relationship between changes in county-level economic conditions and changes in independent school enrollments—no matter which economic variables were used or what time period the percent change was calculated.

When we administered our brief survey to independent school business officers, we also asked them their tuition. We deflated tuition by average wages to get a measure of "real" tuition levels—tuition levels that are related to families' ability to pay for independent schooling. There was substantial variation in these variables in our sample. This variable, *Real Tuition*, averaged 21.6 with a standard deviation of 12 (raw tuition levels ranged from a low of $4,500 to a high of $63,250).[9]

To check for robustness in our empirical models described in the next section, we coded schools that had level enrollments, but had excess demand, as (a) an enrollment increase and separately as (b) not an enrollment increase in various specifications.

Of the 158 responses to our survey, 157 had complete data necessary to estimate our empirical models that are described in the next section. For one independent school in our sample, data on the number of county-level COVID-19 cases and deaths was missing.

Empirical Approach

In this paper we seek to explain the factors associated with the anomalous changes in independent school enrollments in the United States between fall 2019 and fall 2020. Given the severe economic recession in 2020—caused by the COVID-19 pandemic and given the historical and large declines in independent school enrollments that normally occur during economic recessions, perhaps it would be expected that there would have been enrollment declines in fall 2020. But this time was different.

As shown above, 70 percent of independent schools in our sample experienced increases in enrollment or level enrollments in the middle of the pandemic recession. In this section, we estimate empirical models that seek to explain this anomaly. Specifically, we estimate the relationship between COVID-19 prevalence, economic conditions, and public and independent school learning modalities on independent school enrollment changes.

[9] To maximize our survey response rate, we did not ask respondents their exact enrollments for fall 2019.

We estimated an empirical model using a multinomial logit (MNL) approach. In this specification, our dependent variable, a measure of independent school enrollment changes (*Enroll_status*), is a multinomial variable:

Enroll_status = 3, if enrollment increased (between fall 2019 and fall 2020)
2, if enrollment stayed the same
1, if enrollment declined.

In a multinomial logit model, the dependent variable *Y* is a vector with indicators (equal to "0" for outcomes not realized and "1" for the outcome that was realized) for each of the possible discrete outcomes. One possible outcome is selected as the "baseline" case and then the relative probability of the occurrence of each of the other outcomes is modeled as a function of a set of explanatory variables. Specifically, if there are k possible outcomes of the dependent variable, and the baseline outcome is denoted by K, the relative probability of each of the other outcome is estimated with the model

$$ln \frac{\text{Prob } (Y_i = J)}{\text{Prob } (Y_i = K)} = \beta_J X_i$$

Where β_J is a set of coefficients that are multiplied by the set of explanatory variables X_i. This model is estimated for each possible outcome of the dependent variable and then used to reveal the contribution of each explanatory variable on the likelihood of a dependent variable. Thus, for the k possible outcomes, there are k-1 sets of coefficients estimated (Maddala, 1986).

In our model, the dependent value is the change in enrollment at each independent school (*enroll_status*) and the explanatory variables are those related to the presence of COVID-19 in the community, the modality of instruction for the local public schools and a variety of economic factors. For the dependent variable, "decrease in enrollment" was chosen as our baseline value while "same" and "increase" were the other alternative outcomes.
We experimented coding the 14 schools that had no change in enrollments—but had excess demand—as "2" (enrollment stayed the same) and "3" (enrollment increased). Tables 3A and 3B (see also Figure 2) show that the percentage of schools that had an increase in enrollment goes from 48.4 percent if we code schools with excess demand as a "2" to 57.2 percent if we code these schools as a "3".

Table 3A: Enrollment Change by Institution		
(Excess Demand Coded as Same Enroll)		
	Frequency	Percentage
Declined	48	30.2%
Stayed Same	34	21.4%
Increase	77	48.4%
Total	159	100.0%

Table 3B: Enrollment Change by Institution (Excess Demand Coded as Increase Enroll)		
	Frequency	Percentage
Declined	48	30.2%
Stayed Same	20	12.6%
Increase	91	57.2%
Total	159	100.0%

Essentially, the coding approach in Table 3A codes schools based on their actual enrollment patterns—while the approach in Table 3B codes schools based on the changes in demand that they experienced (consider that there were cases where capacity constraints prevented excess demand from being met). As discussed in the next section, the different coding choices do not impact our main results in significant ways.

In our MNL model we endeavor to control for health conditions, economic conditions, the nearby public school district choice of learning modality, and our measure of "real" tuition (tuition divided by average county wages). Using MNL means that one of the dependent variable outcomes is the base category, and that we will be estimating the probability that each one of the other dependent variable outcomes will occur—as a function of the explanatory variables. Our base outcome is *Enroll_Status* = 1, enrollment declined between fall 2019 and fall 2020 and we will be estimating the probability that *Enroll_Status* = 2 relative to this base case—controlling for the explanatory variables, and the probability that *Enroll_Status* = 3 relative to the base case, also as a function of the explanatory variables. Thus, we will be estimating two sets of coefficients—one explaining the probability that *Enroll_Status* = 2 and one set explaining the probability that *Enroll_Status* = 3. The choice of which outcome is the base case is irrelevant to the implications taken from MNL estimation (Maddala, 1986). We present and discuss our MNL results in the next section.

Results

Our preferred specification from our multinomial logit (MNL) empirical approach includes schools with excess demand coded as increases in enrollment and with explanatory variables:

- County level *deaths_percapita* to measure health conditions
- County level *pct_change_employment* to measure economic conditions
- *public_virtual* to measure the learning modality chosen by public school district that serves the county
- *tuition_real* to see if there is a relationship between tuition levels (adjusted by local average wage) and changes in enrollment.

This specification is preferred for the following reasons. First, we ran specifications including *cases_percapita* to measure health conditions, and the estimated coefficient on this variable was consistently near zero with t-statistics close to zero as well. Thus, it appears, as shown in

table 4 below, that *deaths_percapita* was a more salient measure of health conditions to families deciding where to send their children to school.

Second, none of our economic variables—*pct_change_employment*, *pct_change_establishments*, *pct_change_wages* were ever close to statistical significance at conventional levels (p<.31 in table 4 below was the closest it came). Theoretically, it seems that pct_change_employment is the most salient variable, given the nature of the pandemic recession (average wages increased because many low wage industries were closed due to health conditions, etc.). That said, as shown in Appendix 2, using the other measures of economic conditions changes none of the main inferences reported in this section.

Third, *public_hybrid* (=1 if the public school district started fall 2020 with a hybrid learning modality) was never close to statistical significance and had very small point estimates in all specifications we ran.

Appendix 2 contains the results of several other specifications, and the takeaway from Appendix 2 is that the main inferences from the MNL results reported in Table 4 below are robust across specifications. As an example, the choice of coding for the dependent variable also did not impact the implications of the results.

We clustered by state to generate the standard errors in table 4 and in all specifications in Appendix 2.

Table 4: Coefficients for MNL model Explaining Change in Independent School Enrollment from fall 2019 to fall 2020				
Baseline: enroll_status = 1 ("decrease" in enrollment)				
Dependent: enroll_status = 2 ("same" enrollment)				
	Coefficient	**Standard Error**	**Z-score**	**P-value**
deaths_percapita	0.0535	0.0158	3.38	0.001
change_emp_annual	10.0445	9.8861	1.02	0.31
public_virtual	1.1028	0.5895	1.87	0.061
real_tuition	0.0091	0.0100	0.94	0.346
constant	-1.5764	0.7297	-2.16	0.031
Dependent variable: *enroll_status* =3 ("increase" in enrollment)				
	Coefficient	**Standard Error**	**Z-score**	**P-value**
deaths_percapita	0.0042	0.0181	0.23	0.817
change_emp_annual	-1.4410	3.0339	-0.47	0.635
public_virtual	0.8108	0.3565	2.27	0.023
real_tuition	-0.0051	0.0138	-0.37	0.713
constant	0.1113	0.6582	0.17	0.866

As shown in Table 4 above, health conditions measured by *deaths_percapita* had a positive and statistically significant effect (p<.002) on the probability that an independent school experienced no enrollment change—relative to the base case of an enrollment decline. There was essentially no impact of *deaths_percapita* on the likelihood of enrollment experiencing an increase, as the estimated coefficient was small (we discuss marginal effects below) and the z-score equaled 0.23.

Employment conditions as measured by *pct_change_employment* and *real_tuition* did not have statistically significant impacts on the likelihood that schools experienced no change or an increase in enrollment. However, when the public school districts in their county opened in a virtual-only learning modality for fall 2020 (*public_virtual*=1) there was a positive impact on both experiencing no enrollment decline (*enroll_status*=2) and an enrollment increase (*enroll_status*=3), p<.07 and p<.03, respectively.

Marginal Effects

Since they are part of non-linear functions, it is difficult to visualize the effect sizes of MNL coefficient estimates. In this subsection, we discuss the marginal effects of the coefficient estimates listed above in table 4. The marginal effects of *public_virtual* are the effects of changing from *public_virtual*=0 to *public_virtual*=1. The marginal effects of all the other variables are the effect of a one standard deviation increase in these continuous variables, where the standard deviations are listed in tables 1 and 2 above. Marginal effects across all three outcomes sum to "1," because the MNL model produces estimates of the probabilities of each of the three outcomes occurring and the probabilities sum to "1" by construction.

For economy and since the hypothesis was that independent school enrollments would decline due to the severe economic recession in 2020—because enrollments generally declined significantly in prior recessions, we report in table 5 the marginal effect of each variable on the likelihood that independent schools would experience a decline in enrollment (*enroll_status*=1).

Table 5. Marginal Effects on the Probability that Enroll_Status = 1, an enrollment decline

	Estimated Marginal Effects	**p-value**
deaths_percapita	-0.027	0.254
change_emp_annual	-0.003	0.901
public_virtual	-0.173	0.009
real_tuition	0.010	0.747

In our sample, 29.8 percent of independent schools experienced an enrollment decline between fall 2019 and fall 2020. To ascertain the practical significance of each variable, readers should compare the marginal effects of each variable on the probability of an enrollment decline to this 29.8 percent figure. As shown above, a one standard deviation increase in *deaths_percapita* (8.54 per 100,000 county residents) increased the likelihood that an

independent school experienced an enrollment decline by 2.7 percentage points—an almost 10 percent increase in the likelihood of experiencing an enrollment decline. This estimated marginal effect is not statistically significant at conventional levels (p<.26). (The *deaths_percapita* marginal effect on the probability that enrollment stayed the same (*enroll_status*=2) is statistically significant (p<.02), which is not reported here.)

The marginal effect of *pct_change_employment* on the likelihood that enrollment declined was less than a third of one percentage point with a p-value near "1." Thus, we detect no impact of economic conditions on independent school enrollments in the wake of the pandemic recession—a sharp break with the history of independent school enrollments during recessions.

There is a massive effect of public school districts choosing to have a virtual-only learning modality (*public_virtual* =1) at the start of fall 2020. Specifically, when the public school district that served the county opened the school year in a virtual-only format, that decreased the likelihood that an independent school would experience an enrollment decline by 17.3 percentage points (p<.01)—a 58 percent decrease in the likelihood of losing enrollment.

We could detect no effect of *real_tuition* on the likelihood of independent schools losing enrollment, as the estimated marginal effect of a one standard deviation increase in *real_tuition* was only one percentage point and not close to statistical significance (p<.75).

The main limitations of our analysis and results are the sample size (N=158) and that our data come from only fifteen states and the District of Columbia. However, given the stark contrast in learning modalities chosen at the start of fall 2020 between public school districts and independent schools and the very large and statistically significant marginal effects of the virtual-only learning modality in public schools on independent school enrollments, we are confident that "this time was different" because of the different choices made by public school districts and independent schools.

Concluding Remarks

Historically, when economic recessions hit the United States, enrollments in independent (private) K-12 schools have declined. Given that 70 percent of the independent schools in our sample experienced enrollment increases or had enrollments remain the same during the particularly acute pandemic recession, it appears that this time really was different, as compared to the effects of prior economic recessions on K-12 independent schools. To our knowledge, we are the first paper to analyze this anomalous enrollment pattern in K-12 independent schools in the United States during the recent and sharp economic recession caused by the COVID-19 pandemic.

The response of the public education sector to the health crisis appears to have been a significant reason why independent school enrollments did relatively well during the COVID-19 pandemic and recession. Specifically, independent school enrollments tended to increase when the public school districts that serve their counties were open in only a fully virtual learning

modality for fall 2020. Valant (2020), Hartney and Finger (2020), and DeAngelis and Makridis (2020) find that public school modality opening decisions were generally not related to the incidence of COVID-19; that the share of Trump voters in the county was positively associated with public schools opening face-to-face in fall 2020; and DeAngelis and Makridis (2020) and Hartney and Finger (2020) detect a positive relationship between teacher union strength and public schools opening in a virtual-only modality. Hartney and Finger (2020) added that partisan politics drove the "tone and direction of school districts' reopening plans" more than markets or health conditions (p. 18).

In our data, the differences in learning modalities in fall 2020 were stark across sectors:

- 75.5 percent of independent schools in our sample were open for full-time, face-to-face learning.

- Of the public school districts that served the counties in our sample, only 24.5 percent were open for full-time, face-to-face learning.

Hartney and Finger (2020) also find evidence that a larger presence of Catholic schools in the county made it more likely that public schools returned to in-person learning. As our results indicate, it was rational for public school districts to be concerned that students would migrate from the public to the independent education sector when the former was open for virtual instruction only.

While political decisions made by public school districts appear to have been important, surprisingly, economic variables do not seem to be associated with enrollment changes in independent schools between fall 2019 and fall 2020—again, this is a sharp break with history.

Finally, we cannot detect any evidence that the following variables had any impact on independent school enrollments during the COVID-19 pandemic: tuition levels, tuition levels adjusted for differences in average wages across counties, COVID cases per capita, or whether public schools began the 2020-21 academic year in a hybrid learning modality. That is, we estimated very small effect sizes for each of these variables and the z-scores were very close to zero in our regression models. As a caveat to each of these null results—our sample size is small. Perhaps a much larger sample would have been able to detect effects of some of these covariates on independent school enrollments.

Homeschooling also increased significantly in fall 2020. According to the U.S. Bureau of the Census Household Pulse Survey, the number of students being homeschooled rose from 3.2 million just prior to the pandemic to 5.0 million in the August 2020, a rise from 4.8 to 8.7 percent of all school-aged children (Duvall, forthcoming). Nevertheless, Duvall also notes, "the homeschool population declined the following month, perhaps suggesting that some parents decided to reenroll their children in traditional schools after attempting to homeschool for a brief time." Future work should examine whether this rise in homeschooling was related to public school modality decisions and other factors.

In addition, future work should also analyze the extent to which independent school enrollments and homeschooling remain level or elevated in fall 2021 and beyond—as the acute health and economic effects of COVID-19 subside. Perhaps the elevated independent school enrollments and homeschooling will persist into the future, or perhaps many students will return to public schools if health conditions are markedly improved and public schools are open for face-to-face instruction in fall 2021.

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Appendix 1 – Survey Questions and the Distribution of Responses by State

Below are the questions we asked to the business officers whose schools are members of MISBO. The survey was deployed in November 2020 through email with two reminder emails to those who had not completed the survey. The MISBO membership includes 340 schools located primarily in the southeastern United States. Of these 340, 290 business officers were invited to participate in the survey; for the remaining schools, contact information did not include the business officer.

The survey was as follows:

1. What county (COUNTY not country) is your school in?

2. What state is your school in?

3. Roughly, what is your tuition (an average within about $500)?

4. What is your enrollment?

5. For the current school year (and with a margin of 5 students or more), relative to last year, did your enrollment:

    a. INCREASE
    b. DECREASE
    c. STAY ABOUT THE SAME

6. If your enrollment this year is “about the same” as last year, is it the case that you had excess demand but were unable to add more students because you were at capacity?

    a. Yes
    b. No
    c. doesn’t apply

7. Currently, is your school:

    a. FULL TIME, FACE-TO-FACE
    b. HYBRID, PART TIME FACE-TO-FACE
    c. FULLY VIRTUAL

Below are the fifteen states and the District of Columbia represented in our sample of independent schools.

State	Number of Schools Responding	Percent of Respondents	Cumulative Percent
AL	8	5.06%	5.06%
AR	1	0.63%	5.70%
CA	1	0.63%	6.33%
CO	2	1.27%	7.59%
DC	3	1.90%	9.49%
FL	24	15.19%	24.68%
GA	49	31.01%	55.70%
IL	1	0.63%	56.33%
KY	1	0.63%	56.96%
MD	3	1.90%	58.86%
MO	2	1.27%	60.13%
NC	19	12.03%	72.15%
SC	9	5.70%	77.85%
TN	18	11.39%	89.24%
TX	2	1.27%	90.51%
VA	15	9.49%	100.00%

Appendix 2 – Other Empirical Model Specifications to Analyze Changes in Independent School Enrollments

In this appendix we report the results of five different empirical specifications to show that the main results in the body of the paper are robust across specifications—and to show that certain variables like county-level COVID-19 *cases_percapita* and the economic variables do not seem to be associated with changes in private school enrollments between fall 2019 and fall 2020.

In tables A1 and A2 below, we show the marginal effects from our preferred MNL specification that was reported in the body of the paper—with one change. In table A1, we replaced *change_emp_annual* (the annual change in county-level employment) with *change_wages_annual* (the percent annual change in average wages from Q2 2019 to Q2 2020). In table A2, the economic variable we used in place of *change_emp_annual* was *change_estab_annual* (the percent annual change in the number of establishments for this same time period).

Please recall that in our sample, 29.8 percent of independent schools experienced an enrollment decline between fall 2019 and fall 2020. To ascertain the practical significance of each variable, readers should compare the marginal effects of each variable on the probability of an enrollment decline to this 29.8 percent figure. Also recall that the marginal effects for *public_virtual* are the difference between *public_virtual*=0 and *public_virtual*=1. Each of the other covariates are continuous variables, so the marginal effects are the effect of a one standard deviation increase.

Table A1. Marginal Effects on the Probability that Enroll_Status = 1, an enrollment decline. *change_wages_annual* is the economic variable.

	Estimated Marginal Effects	**p-value**
deaths_percapita	-0.030	0.306
change_wages_annual	-0.006	0.940
public_virtual	-0.164	0.025
real_tuition	0.0006	0.816

Table A2. Marginal Effects on the Probability that Enroll_Status = 1, an enrollment decline. *change_estab_annual* is the economic variable.

	Estimated Marginal Effects	**p-value**
deaths_percapita	-0.020	0.365
change_estab_annual	-0.014	0.635
public_virtual	-0.158	0.022
real_tuition	-0.00005	0.983

In both of the above specifications, the estimated coefficients on the economic variables and *real_tuition* have very small marginal effects and are not close to statistical significance. The

effect sizes of public_virtual are almost identical to what is in our preferred specification and this variable is statistically significant (p<.03) in both of these specifications (tables A1 and A2). *Deaths_percapita* is not statistically significant, as was the case in our preferred results, and the effect sizes are almost identical to our preferred specification. The statistical significance of the marginal effect of *deaths_percapita* on enroll_status=2 (no change in enrollment) is about the same as our preferred results (p<.002) in this specification (not shown).

In table A3 we display the marginal effects from estimates with one change to our preferred MNL specification—we used county-level *cases_percapita* from August 2020 as our measure of the health conditions present in the county, instead of *deaths_percapita*. As shown below, it appears that *cases_percapita* was not as salient to families when they were making decisions on where to send their children to school—not as salient as *deaths_percapita*. The marginal effect of *cases_percapita* is approximately zero with a very large p-value. This result was the case for every other specification we tried for *cases_percapita*. While we find some evidence that *deaths_percapita* were associated with keeping enrollments level, we can detect no evidence that *cases_percapita* had any effect on independent school enrollments.

Table A3. Marginal Effects on the Probability that *enroll_status* = 1, an enrollment decline. *cases_percapita* is the health variable.

	Estimated Marginal Effects	**p-value**
cases_percapita	-0.00002	0.885
change_emp_annual	-0.002	0.851
public_virtual	-0.162	0.034
real_tuition	0.0008	0.804

Table A4 shows the marginal effects from estimates with one change to our preferred MNL specification—the dependent variable codes schools with excess demand as having no change in enrollment (*enroll_status*=2). Thus, independent schools who reported that they had no enrollment changes between fall 2019 and fall 2020, yet had excess demand, were coded as having no enrollment change. As seen below, this coding change does not impact the main conclusions in the body of the paper.

Table A4. Marginal Effects on the Probability that Enroll_Status = 1, an enrollment decline. Independent schools with excess demand were coded as experiencing no enrollment change.

	Estimated Marginal Effects	**p-value**
deaths_percapita	-0.003	0.223
change_emp_annual	-0.008	0.938
public_virtual	-0.173	0.023
real_tuition	0.0008	0.796

For the empirical specification in table A5 below, we changed the dependent variable to be dichotomous, Y=1 if the independent school experienced no enrollment decrease between fall 2019 and fall 2020, and Y=0 if the school did experience an enrollment decrease. This specification increases our degrees of freedom, as it requires only one set of coefficients to be estimated. We display the ordinary least squares (OLS) results below. The virtue of OLS is that it is easy to interpret effect sizes from the coefficient estimates. For example, when public schools in the county were open only for virtual instruction (public_virtual=1), the likelihood of private schools experiencing a decline in enrollment fell by 18.15 percentage points—very close to our preferred results from the MNL specification in the body of the paper. The other implications from the preferred MNL specification are highly similar to this OLS specification as well.

Table A5. OLS Estimates of the Preferred Model Independent Variables with a Dichotomous Dependent Variable

		R-squared = 0.0353					
dep var =0 if enroll decrease							
equals 1 if no enroll decrease							
		Coefficient	**Std. Err**	**t**	**P>|t|**	**[95% Conf. Interval**	
deaths_percapita		0.0034	0.0025	1.34	0.2	-0.0020	0.0088
change_emp_annual		0.0916	0.7006	0.13	0.898	-1.4017	1.5848
public_virtual		0.1815	0.0752	2.41	0.029	0.0212	0.3418
Treal		-0.0006	0.0027	-0.22	0.832	-0.0063	0.0052
constant		0.5693	0.1278	4.46	0	0.2970	0.8416

Finally, we estimated a few dozen other specifications (employed an ordered probit approach, shorter changes in economic variables, public schools opening in a hybrid modality as a covariate; independent school learning modality as a covariate, etc.), and none of them yielded results that would have changed the main conclusions in this paper. The latter variable, independent school learning modality, is theoretically endogenous, as independent schools concerned about losing enrollment during the pandemic may have been more likely to open for face-to-face instruction. Given this endogeneity issue, we do not report an empirical specification with independent school learning modality as a covariate.